UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/667,669	09/23/2003	Masatoshi Omoto	204552029700	9101

7590 12/29/2004

Barry E. Bretschneider
Morrison & Foerster LLP
Suite 300
1650 Tysons Boulevard
McLean, VA 22102

EXAMINER	
GUHARAY, KARABI	
ART UNIT	**PAPER NUMBER**
2879	

DATE MAILED: 12/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

AK

Office Action Summary	Application No.	Applicant(s)	
	10/667,669	OMOTO, MASATOSHI	
	Examiner	Art Unit	
	Karabi Guharay	2879	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2 and 5-17* is/are rejected.

7)☒ Claim(s) *3 and 4* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 September 2003* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *9/23/03*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Priority

Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Drawings

Figure 14 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: ------- LED DEVICE INCLUDING PHOSPHOR LAYERS ON THE REFLECTING SURFACE------.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 10-11, 13-14 & 17 are rejected under 35 U.S.C. 102(b) as being anticipated by Virens et al, (US 5813753).

Regarding claim 10, Vriens discloses a LED device (Fig 2) comprising a base (22) having a recess with the upper surface opened, the inner wall surface (23) of the recess constituting a reflecting surface (mirror surface), a LED chip disposed on the inner bottom of the recess, a resin (25) filled in the recess, the resin including phosphors (24) which absorb a part of the light from the LED chip to convert the wavelength thereof (lines 17-36 of column 3) and an ultraviolet ray reflecting material applied on the reflecting surface (UV mirror is formed on the reflecting surface 23, lines 14-17 of column 4).

Claim 11 recites a method of forming the mirror surface. However, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Regarding claim 13, Vriens disclose that the dyes (phosphor 24) are mixed with the resin (25, see Fig 2).

Regarding claim 14, Vreins discloses a LWP filter (37 of Fig 3), which reflects UV light on the opening of the recess (line 65 of Col. 4 - line 8 of Col. 5).

Regarding claim 17, Virens discloses that the center portion of the bottom is protruded below (see Fig 2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 5, 7-9, 12, 15-16, are rejected under 35 U.S.C. 103(a) as being unpatentable over Vreins et al. (US 5813753), and further in view of Suehiro et al. (US 20030201451).

Regarding claim 1, Vriens et al. disclose an LED device 20 (Fig 2) comprising a base (22) having a recess with the upper surface opened, the inner wall (23) of the recess constituting a reflecting surface; a LED chip (21) disposed on the inner bottom of the recess, a resin (25) is filled in the recess, the resin including phosphors (24) which absorb a part of the light emitted from the LED to convert the wavelength thereof and emit light (lines 17-36 of column 3).

But Vreins et al. fail to disclose a phosphor layer formed on the reflection surface.

However, Suehiro et al. disclose a similar LED device, wherein the reflecting surfaces (7a of Fig 4) is coated with a phosphor layer (see paragraph 0044) in order to reduce fluorescence attenuation by light absorption thus enhancing the efficiency of light radiation outside LED (see paragraph 0003 & paragraph 0009).

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to use phosphor coating on the reflecting surface as taught by Suehiro et al. in the device of Vriens et al. since this will enhance the radiation of light outside the LED device.

Regarding claim 2, Vreins discloses a UV/blue LED chip 21 (line 18 of column 3), thus emits radiation of 430nm or below.

Claim 5 recites a method of forming the phosphor layer. However, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Regarding claims 7 & 8, Suehiro et al. disclose that the base (3 of Fig 4) is made of glass (see paragraph 0034), and phosphor layer 6 is overlaid on a metal plating 7a of aluminum (paragraph 0044). The same reason for combining art as in claim 1 applies.

Claim 9 recites a method of forming the metal plating. However, the method of forming the device is not germane to the issue of patentability of the device itself. Therefore, this limitation has not been given patentable weight.

Regarding claim 12, Suehiro et al. disclose that the LED device further comprises a reflection resin layer (resin layer 6 on counter reflecting surface 16, see Fig 5) disposed on the opening of the recess separated from the resin (8) resin layer includes mirror surfaces since resin layer 6 provides reflection surface (Fig 5).

Regarding claim 15, Suehiro discloses a thin trimmed phosphor layer (layer 6 including phosphor particles on the counter reflecting surface 16 on the opening of the recess (see Fig 5). Further recitation of method of trimming the layer has not been given patentable weight since method of forming a device is not germane to the patentability of the device.

Claim 16 recites, "a heat pipe may be disposed" which is not a positive limitation but only recites the desirability of a heat pipe, thus It does not constitute a limitation in any patentable sense.

Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Virens et al. in view of Suehiro et al. as applied to claim 1 above, and further in view of Budd (US 5593782).

Regarding claim 6, combined structure of Virens and Suehiro disclose all the limitation of claim 6, except for phosphors are enclosed by microcapsule each comprising Si as a main component.

However, Budd discloses encapsulation of phosphor particles by a thin oxide layer comprising silicon as the main component (see Abstract and lines 24-37 of column 5) in order to protect phosphor particles from moisture.

Thus, it would have been obvious tone having ordinary skill in the art at the time the invention was made to encapsulate the phosphor particles by a layer comprising silicon, as taught by Budd, since this will prevent damage of the phosphor particles from moisture.

Allowable Subject Matter

Claims 3-4 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject matter: The prior art of record neither shows nor suggests a LED device having plurality of phosphor layers on the reflecting surface each of which is excited to emit a different wavelength of light from each other.

Other Prior Art Cited

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure : Ng (US 20020021085).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Karabi Guharay whose telephone number is (571) 272-2452. The examiner can normally be reached on Monday-Friday 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (571) 272-2457. The fax phone number for the organization is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Karabi Guharay

Karabi Guharay
Patent Examiner
Art Unit 2879